

REMARKS

Applicants respectfully acknowledge receipt of the Office Action mailed June 28, 2007.

In the Office Action, the Examiner rejected claims 1 and 10 under 35 U.S.C. § 102(e) as being anticipated by *Hsu et al.* (U.S. Patent Pub. No. 2004/0178483); and rejected claims 1 and 10-13 under 35 U.S.C. § 103(a) as being unpatentable over *Fjelstad* (U.S. Patent No. 6,583,444) in view of *Minamio et al.* (U.S. Patent No. 6,900,524).

By this Amendment, Applicants amend claim 1. Upon entry of this Amendment, claims 1 and 10-13 will remain pending. Of these claims, claim 1 is independent. Claims 2-9 were previously canceled in the Amendment filed March 17, 2005, and claim 14 was previously canceled in the Amendment filed March 10, 2006.

The originally-filed specification, claims, abstract, and drawings fully support the amendments to claim 1. No new matter has been introduced.

Applicants traverse the rejections above and respectfully request reconsideration for at least the reasons that follow.

I. 35 U.S.C. § 102(e) REJECTION

Applicants traverse the rejection of claims 1 and 10 under 35 U.S.C. § 102(e) as being anticipated by *Hsu*. Applicants respectfully submit that amended independent claim 1 patentably distinguishes over *Hsu* at least for the reasons described below.

In order to properly establish that *Hsu* anticipates Applicants' claimed invention under 35 U.S.C. § 102, each and every element of each of the claims in issue must be found, either expressly described or under principles of inherency, in that single

reference. Furthermore, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” See M.P.E.P. § 2131, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

Hsu appears to disclose a method of packaging a quad flat no-lead (QFN) semiconductor, including a QFN semiconductor that uses a metal frame having multiple component carriers consisting of die pads and leads attached to a tape. Dies are respectively attached to and wire bonded to the component carriers. A glue wall is formed around all of the component carriers on the metal frame. When a transparent encapsulant is poured inside the glue wall, the dies and the component carriers are covered. (*Hsu*, Abstract).

Hsu, however, does not disclose wherein soldering terminals provided by a base are part of an electrically conductive frame and are exposed only at bottom and side portions of an optoelectronic component, as required by claim 1.

Instead, as illustrated in FIG. 3 and discussed in paragraph [0027] of *Hsu*, “the component carrier (12) has a die pad (13) and multiple isolated leads (14). The die pad (13) is rectangular and has four edges...The multiple leads (14) are near the four edges of the die pad (13)” (emphasis added).

Accordingly, with respect to independent claim 1, *Hsu* fails to teach Applicants’ claimed combination, including, *inter alia*:

“soldering terminals provided by the base are part of said electrically conductive frame and are exposed only at bottom and side portions of said component” (emphasis added).

Since *Hsu* fails to disclose each and every element of independent claim 1, *Hsu* fails to anticipate claim 1, and claim 10, that depends from claim 1. Therefore, claims 1 and 10 are patentable over *Hsu*.

II. 35 U.S.C. § 103(a) REJECTION

Applicants traverse the Examiner's rejection of claims 1 and 10-13 under 35 U.S.C. § 103(a) as being unpatentable over *Fjelstad* in view of *Minamio*. Applicants respectfully submit that amended independent claim 1 patentably distinguishes over *Fjelstad* and *Minamio* at least for the reasons described below.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), the prior art reference (separately or in combination) must teach or suggest all the claim limitations. See M.P.E.P. § 2142, 8th Ed., Rev. 5 (August 2006). "[I]n formulating a rejection under 35 U.S.C. § 103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed." *USPTO Memorandum* from Margaret A. Focarino, Deputy Commissioner for Patent Operations, May 3, 2007, p. 2. "[T]he analysis supporting a rejection ... should be made explicit" and it is "important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements in the manner claimed." *Id.* (citing *KSR Int'l Co. v. Teleflex, Inc.*, No. 04-1350 (U.S. Apr. 30, 2007)).

Fjelstad appears to disclose a method of making a package having a semiconductor chip. A sacrificial layer 20 is provided having a first surface 22 and a second surface 24. Photolithographic techniques are used to define a pattern over the first surface 22 of the sacrificial layer 20. Preferably, a photo-resist layer 25 is formed

over the first surface 22 of the sacrificial layer 20 and apertures are developed and removed using photolithographic techniques. Next, a base 26 and a plurality of conductive pads 28 are deposited or electroplated within the apertures in the photo-resist layer 25 of the first surface 22 of the sacrificial layer 20. The remainder of the photo-resist layer 25 is removed from the first surface 22 of the sacrificial layer 20 to leave behind one or more bases 26, whereby each base 26 is surrounded by conductive pads 28 associated therewith. (*Fjelstad*, col. 6, line 35 - col. 7, line 3).

As admitted by the Examiner, “*Fjelstad* shows all of the elements of the claims except the grooves and wings in the base material to enhance anchorage...” (*Office Action*, p. 4, ll. 2-4). *Fjelstad* also fails to disclose wherein soldering terminals provided by the base are part of said electrically conductive frame and are exposed only at bottom and side portions of said component, as required by amended claim 1 (emphases added). Rather, *Fjelstad* appears to disclose in FIGs. 3A-3I wherein the conductive pads 28 are separate connections which surround the base 26, as opposed to being provided by the base 26 itself (emphasis added). Moreover, the conductive pads 28 are exposed only on a bottom portion of the semiconductor package, not a side portion (emphasis added).

In order to cure the deficiencies of *Fjelstad*, the Examiner relies on *Minamio* and alleges “*Minamio* shows (fig. 1) grooves (19) and wings (next to grooves) formed in the metal frame/base member (13).” (*Office Action*, p. 4, ll. 4-6). *Minamio* appears to disclose a semiconductor chip 12 mounted on a die pad portion 11 of a lead frame 9, which is supported by suspension leads 10. Outer lead portions 16 serve as external terminals and are arranged in a bottom face region of a sealing resin 15. The outer lead

portions 16 are formed to be continuous with respective inner lead portions 13, wherein the inner lead portions 13 include a plurality of grooves 19 formed in the surface. (*Minamio*, col. 7, ll. 23-56).

Even if *Minamio* properly could be considered to disclose grooves and wings formed in the metal frame/base member, which Applicants do not necessarily concede, *Minamio* fails to teach or suggest wherein soldering terminals provided by a base are part of an electrically conductive frame and are exposed only at bottom and side portions of an optoelectronic component, as required by claim 1. Rather, as illustrated in Fig. 2 of *Minamio*, outer lead portions 16 are arranged around the four edges of the die pad portion 11 (emphasis added).

Accordingly, with respect to independent claim 1, *Fjelstad* and *Minamio* fail to teach Applicants' claimed combination, including, *inter alia*:

“soldering terminals provided by the base are part of said electrically conductive frame and are exposed only at bottom and side portions of said component” (emphases added).

For at least the foregoing reasons, a *prima facie* case of obviousness has not been established with respect to independent claim 1. Accordingly, independent claim 1, and claims 10-13 that depend from claim 1, are patentable over *Fjelstad* and *Minamio*. Applicants therefore request that the rejection of claims 1 and 10-13 under 35 U.S.C. § 103(a) be withdrawn.

III. CONCLUSION

Applicants respectfully submit that claims 1 and 10-13 are in condition for allowance.

The Office Action contains characterizations of the claims and the related art with which Applicants do not necessarily agree. Unless expressly noted otherwise, Applicants decline to subscribe to any statement or characterization in the Office Action.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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